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Andries/van Dam Principal Investigator

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### Summary of Activities

↓ Activities during the course of this contract included:

Design, implementation, and installation of the TESTBED communications system;

Design and implementation of the PUCE1 Target Machine; and the

Design, implementation, and testing of CFA benchmark programs.

A number of design and research documents were produced during the course of this work; these are listed in the annotated bibliography of the next section of this report.



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## Summary of Documents

Harrington, Richard J., George M. Stabler, and Martin J. Michel. The Testbed Communications Package -- User Overview. Division of Applied Mathematics, Brown University, Providence, R. I. (March, 1975).

General user-level overview of the capabilities provided by the Testbed Communications Package (TBAG). Does not go into specific programming details such as parameter list layouts, etc.

Stabler, George M., Martin J. Michel, and R. J. Harrington. The Testbed Communications Package -- Program Logic Overview. Division of Applied Mathematics, Brown University, Providence, R. I. (March, 1975).

Gives a general overview of the line protocol, control block structure, and program logic used in the communications package. Except for the line protocol, the overview is not specific to any of the three implementations of the package.

Harrington, Richard J. The Testbed Communications Package -- AN/UYK-20 Version User Guide. Division of Applied Mathematics, Brown University, Providence, R. I. (May, 1975).

The user manual for the /20 version of the communications package. Details are given on calling sequences, return codes, and the control blocks that the package assumes are provided by the /20's operating system.

Harrington, Richard J. The Testbed Communications Package -- AN/UYK-20 Version Program Logic. Division of Applied Mathematics, Brown University, Providence, R. I. (July, 1975).

A fairly detailed description of the program logic of the /20 version of the communications package. The description is in sufficient detail to allow modifications to the package if made necessary by changes in the /20's operating system environment.

Michel, Martin J. The Testbed Communications Package -- GT-44 Version User Guide. Division of Applied Mathematics, Brown University, Providence, R. I. (June, 1975).

The user manual for the GT-44 version of the communications package, including all calling sequences and other user information.

Michel, Martin J. The Testbed Communications Package -- GT-44 Version Program Logic. Division of Applied Mathematics, Brown University, Providence, R. I. (June, 1975).

A fairly detailed description of the program logic of the GT-44 version of the communications package and the interface to the RT-11 operating system.

Stabler, George M. SPE User Guide. Division of Applied Mathematics, Brown University, Providence, R. I. (May, 1975).

A guide to accessing the various SPE components (SPAUI, SCC1, SCC2) and a description of the command message formats used to invoke the various available SPE functions. (It is assumed that exact descriptions of the SPAUI algorithms are given elsewhere.)

Stabler, George M. SPE Control Program Logic. Division of Applied Mathematics, Brown University, Providence, R. I. (June, 1975).

A fairly detailed description of the two main subsystems that comprise the Testbed MCU control program -- the communications package logic and the command message handler.

Stabler, George M. An Evaluation of Multiprocessing Facilities in SPL/1. Division of Applied Mathematics, Brown University, Providence, R. I. (August 31, 1975).

This document reviews some basic issues in multiprocessing, provides a brief outline of the multiprocessing constructs currently provided by SPL/1, and discusses some of the issues raised by the current design of these constructs.

Stabler, George M., Martin J. Michel, and R. J. Harrington. Toward a Functional Specification of a Fourth Generation SPL/1 Target Machine. Division of Applied Mathematics, Brown University, Providence, R. I. (September 30, 1975).

This document discusses some of the implications of current and future developments in computer architecture, of improvements in the design of high-order languages, and of conceptual advances in computer science, for future signal processing systems, with particular reference to the SPL/1 language and the design of a machine to support an SPL/1 operating environment.

Harrington, Richard J., Martin J. Michel, and G. M. Stabler. PUCE-1 Principles of Operation. Division of Applied Mathematics, Brown University, Providence, R. I. (February, 1976).

The initial design of a specialized control processor for an advanced functionally distributed signal processor system is presented. Features of the processor include: tagged architecture, segmentation, structured



control primitives, array slicing capability, task control and synchronization facilities, and vector and matrix arithmetic primitives.

Michel, Martin J. Architecture Test and Evaluation. Division of Applied Mathematics, Brown University, Providence, R. I. (June 30, 1976).

Discussion of design criteria and implementation considerations for benchmark programs to be used for testing and evaluating typical computer architectures.